MARCO DORIGO'S CURRICULUM VITAE AND PUBLICATIONS LIST

IRIDIA
UNIVERSITE LIBRE DE BRUXELLES
BELGIUM

HIGHLIGHTS

Main Prizes

IEEE Evolutionary Computation Pioneer Award, awarded in 2016, by the Institute of Electrical and Electronics Engineers.

IEEE Frank Rosenblatt Award, awarded in 2015, by the Institute of Electrical and Electronics Engineers.

Honorary Doctorate in Computer Science, awarded on April 21, 2015, by University of Pretoria, South Africa.

Cajastur International Prize for Soft Computing "Mamdani Prize", awarded on November 27, 2007, by the Foundation for the Advancement of Soft Computing.

Dr A. De Leeuw-Damry-Bourlart Award in Applied Sciences (Prix scientifique quinquennal du F.R.S.-FNRS), awarded on November 22, 2005, by the Belgian National Fund for Scientific Research.

Marie Curie Excellence Award, awarded on November 5, 2003, by the European Commission.

Italian Prize "Marco Somalvico" for Artificial Intelligence, awarded on September 27, 1996, by the Italian association for artificial intelligence.

Research funding

He has coordinated numerous European and Belgian research projects. In 2010, he received an ERC Advanced Grant worth two million euros.

Citations

Many of his papers have received a number of citations well above the average.

From the Google Scholar database (June 2026):

- h-index = 126; total number of citations to his papers > 166,000.
- His top ten most cited publications received ~100,000 citations. In particular, his papers IJ.10 and IJ.16 received ~20,000 and ~12,000 citations, respectively.

Editorial activities

Honorary Editor of the journal "Swarm Intelligence" (Founding editor, 2007).

Advisory board member for the journal "Science Robotics"**.**

Member of the editorial board of ten international journals.

Editor of twentyone books/proceedings/journal special issues.

Books

His book *Swarm Intelligence* has sold over 10,000 copies and received more than 11,000 citations on Google Scholar.

His book *Ant Colony Optimization* has sold over 7,000 copies in its English version and was translated into Chinese, where it sold more than 4,000 copies.

EDUCATION

Habilitation

Agrégé de l'Enseignement Supérieur (qualification for university professorship) at the Applied Sciences Faculty, Université Libre de Bruxelles, Belgium, December 21, 1995.

Dissertation title: The Robot Shaping Approach to Behavior Engineering.

Dissertation Committee: Bernard Leduc (dean), Alain Delchambre, Pierre Gaspart, Raymond Hanus, Jean-Arcady Meyer (foreign expert), André Preumont, Philippe Smets.

Doctorate

Doctorate in Systems and Information Engineering, Politecnico di Milano, Italy, September 23, 1992.

Dissertation title: Ottimizzazione, apprendimento automatico, ed algoritmi basati su metafora naturale (Optimization, Learning, and Natural Algorithms).

Dissertation Committee: Maurelio Boari, Mario Refice, Domenico Saccà, Alberto Colorni, Alberto Bertoni, Marco Somalvico.

Master

Laurea (Master) in Industrial Technologies Engineering, Politecnico di Milano, Italy, June 11, 1986.

RESEARCH EXPERIENCE

Research direction

Directs a group composed of:

- Three senior tenured researchers: Dr. Mauro Birattari (FNRS research director), Dr. Thomas Stützle (FNRS research director), and Dr. Mary Katherine Heinrich (FNRS research associate).
- One postdoctoral researcher.
- Five doctoral students.

Affiliations

IRIDIA, UNIVERSITE' LIBRE DE BRUXELLES, BELGIUM. Research director (Directeur de Recherches). Tenured position at the FNRS (Belgian National Fund for Scientific Research). Since Oct 2004.

SWARM INTELLIGENCE GROUP, DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF PADERBORN, GERMANY. Full professor of swarm intelligence (part-time). Jun 2011 – Dec 2014.

IRIDIA, UNIVERSITE' LIBRE DE BRUXELLES, BELGIUM. Senior researcher (Maître de Recherches). Tenured position at the FNRS (Belgian National Fund for Scientific Research). Oct 2000 – Sep 2004.

IRIDIA, UNIVERSITE' LIBRE DE BRUXELLES, BELGIUM. Associate researcher (Chercheur qualifié). Tenured position at the FNRS (Belgian National Fund for Scientific Research). Oct 1996 – Sep 2000.

IDSIA, ISTITUTO DALLE MOLLE, LUGANO, SWITZERLAND. Researcher in artificial intelligence and robotics. Jun 1996 – Sep 1996.

IRIDIA, UNIVERSITE' LIBRE DE BRUXELLES, BELGIUM. Marie Curie post-doctoral researcher in artificial intelligence with Prof. Philippe Smets. Aug 1994 – May 1996.

IDSIA, ISTITUTO DALLE MOLLE, LUGANO, SWITZERLAND. Researcher in artificial intelligence and robotics. Jun 1994 – Jul 1994.

IRIDIA, UNIVERSITE' LIBRE DE BRUXELLES, BELGIUM. NATO-CNR post-doctoral researcher in artificial intelligence with Prof. Philippe Smets. Jul 1993 – May 1994.

POLITECNICO DI MILANO ARTIFICIAL INTELLIGENCE AND ROBOTICS PROJECT, DIPARTIMENTO DI ELETTRONICA E INFORMAZIONE, POLITECNICO DI MILANO. Researcher in artificial intelligence. Apr 1993 – Jun 1993.

INTERNATIONAL COMPUTER SCIENCE INSTITUTE, BERKELEY, CALIFORNIA. Post-doctoral researcher in artificial intelligence, with Prof. Jerome Feldman. Apr 1992 – Mar 1993.

POLITECNICO DI MILANO ARTIFICIAL INTELLIGENCE AND ROBOTICS PROJECT, DIPARTIMENTO DI ELETTRONICA E INFORMAZIONE, POLITECNICO DI MILANO. Researcher in artificial intelligence. Nov 1991 – Mar 1992.

POLITECNICO DI MILANO ARTIFICIAL INTELLIGENCE AND ROBOTICS PROJECT, DIPARTIMENTO DI ELETTRONICA E INFORMAZIONE, POLITECNICO DI MILANO. PhD student in Systems and Information Engineering with Prof. Alberto Colorni and Prof. Marco Somalvico. Nov 1988 – Oct 1991.

POLITECNICO DI MILANO ARTIFICIAL INTELLIGENCE AND ROBOTICS PROJECT, DIPARTIMENTO DI ELETTRONICA E INFORMAZIONE, POLITECNICO DI MILANO. Graduate researcher with Prof. Marco Somalvico. Jan 1988 – Oct 1988.

MARIO NEGRI INSTITUTE FOR PHARMACOLOGICAL RESEARCH, MILANO. Researcher in artificial intelligence with Prof. Stefano Cerri. May 1986 – Dec 1987.

Short visits to foreign laboratories

INSTITUT D'INVESTIGACIO EN INTEL.LIGENCIA ARTIFICIAL, CSIC-SPANISH SCIENTIFIC RESEARCH COUNCIL, BELLATERRA, CATALONIA, SPAIN. Visiting professor. May 2002 - Aug 2002.

INTERNATIONAL COMPUTER SCIENCE INSTITUTE, BERKELEY, CALIFORNIA. Visiting scientist. Mar 1996 - Apr 1996.

IDSIA, ISTITUTO DALLE MOLLE, LUGANO, SWITZERLAND. Visiting scientist. Jun 1995 - Aug 1995.

I3S, CNRS, SOPHIA ANTIPOLIS, NICE, FRANCE. Visiting scientist. Apr 1995.

GMD, SANKT AUGUSTIN. Visiting researcher. Summer 1991.

TECHNISCHE UNIVERSITÄT MÜNCHEN. Graduate researcher in artificial intelligence with Professor W. Brauer. Jul 1989 - Dec 1989, and Apr 1990.

TEACHING EXPERIENCE

Professor

UNIVERSITE' LIBRE DE BRUXELLES, BELGIUM. Research professor. Started in academic year 2008-09 – still active.

PADERBORN UNIVERSITY, GERMANY. Full professor (W3). Started in academic year 2010-11 – ended December 2014.

POLITECNICO DI MILANO AT CREMONA, ITALY. Professor (one-year contract) of "Knowledge Engineering and Expert Systems." Sep 1994 - Aug 1995.

POLITECNICO DI MILANO AT CREMONA, ITALY. Professor (one-year contract) of "Knowledge Engineering and Expert Systems." Sep 1993 - Aug 1994.

Teaching Assistant

DIPARTIMENTO DI ELETTRONICA E INFORMAZIONE, POLITECNICO DI MILANO. Taught lessons and graded papers for Introduction to Computer Science, Industrial Electronics, and Operation Research. I have supervised many students as a teaching assistant in the following courses at Politecnico of Milano: Advanced Computer Languages, Artificial Intelligence, Robotics. Nov 1988 - Mar 1992.

Post Doctoral Researchers currently under supervision

Dr. Volker Strobel	since May 2022

Supervised Post Doctoral Researchers

Dr. Mary Katherine Heinrich	May	2019	–	Sep	2025	
Dr. Christian Leonardo Camacho Villalón	Sep	2023	–	Oct	2024	
Dr. Andreagiovanni Reina	Dec	2020	–	Nov	2023	
Dr. Mostafa Whaby	Oct	2019	–	Sep	2020	
Dr. Michael Allwright	Sep	2017	–	Mar	2022	
Dr. Eduardo Castelló Ferrer	Sep	2017	–	Aug	2020	
Dr. Yasumasa Tamura	Mar	2016	–	Feb	2017	
Dr. Carlo Pinciroli	May	2014	–	Nov	2014	
Dr. Rehan O'Grady	Oct	2010	–	Sep	2015	
Dr. Michele Pace	Sep	2011	–	Apr	2014	
Dr. Vito Trianni	Oct	2010	–	Dec	2011	
Dr. Alexander Scheidler	Feb	2010	–	Mar	2012	
Dr. Ali Emre Turgut	Nov	2008	–	Nov	2011	
Dr. Paola Pellegrini	Nov	2010	–	Oct	2011	
Dr. Elio Tuci	Nov	2003	–	Mar	2008	
Dr. Hussain Saleh	Oct	2001	–	Sep	2003	(Marie Curie fellow)
Dr. Erol Sahin	Oct	2001	–	Oct	2002	
Dr. Joshua Knowles	Sep	2001	–	Aug	2003	(Marie Curie fellow)
Dr. Michael Sampels	Apr	2001	–	Mar	2003	
Dr. Stefka Fidanova	Nov	2000	–	Oct	2002	(Marie Curie fellow)
Dr. Nicolas Meuleau	Nov	2000	–	Nov	2001	(Marie Curie fellow)
Dr. Thomas Stützle	Dec	1998	–	Feb	2000	(Marie Curie fellow)

PhD Students currently under supervision

Giuseppe Patarino	since 2024
Himank Gupta	since 2022
Raina Zakir	since 2021
Zhu Weixu	since 2017

Supervised PhD Students who have received their doctorate (with indication of current position for those who continued a research career)

Alexandre Pacheco	PhD awarded on April 24, 2026
Sinan Oğuz	PhD awarded on December 15, 2025
Roman Miletitch	PhD awarded on January 29, 2024
Christian Leonardo Camacho Villalón	PhD awarded on August 7, 2023 Now Postdoctoral Researcher at IRIDIA, Université Libre de Bruxelles, Belgium
Aryo Jamshidpey	PhD awarded on December 12, 2022 Now Postdoctoral Researcher at University of Toronto, Canada
Volker Strobel	PhD awarded on April 25, 2022 Now Postdoctoral Researcher at IRIDIA, Université Libre de Bruxelles, Belgium
Nithin Mathews	PhD awarded on February 26, 2018
Michael Allwright	PhD awarded on September 8, 2017
Gaëtan Podevijn	PhD awarded on January 27, 2017
Gabriele Valentini	PhD awarded on July 4, 2016
Andrea Giovanni Reina	PhD awarded on June 24, 2015 Now Postdoctoral Researcher at University of Konstanz, Germany
Luca M. Gambardella	PhD awarded on June 24, 2015 Now Full Professor and Vice Rector for Innovation, Università della Svizzera italiana, Lugano, Switzerland
Arne Brutschy	PhD awarded on December 17, 2014
Carlo Pinciroli	PhD awarded on April 28, 2014 Now associate professor in Robotics Engineering at Worcester Polytechnic Institute, USA
Manuele Brambilla	PhD awarded on April 28, 2014
Eliseo Ferrante	PhD awarded on August 27, 2013 Now Vice-President of the Autonomous Robotics Research Center at the Technology Innovation Institute (Abu Dhabi, UAE) and Assistant Professor at the Vrije Universiteit Amsterdam, The Netherlands
Tianjun Liao	PhD awarded on June 28, 2013 Now Project Officer for the AI funding Agency, China
Giovanni Pini	PhD awarded on June 14, 2013
Marco Montes de Oca	PhD awarded on July 1, 2011 Now Lecturer at Northeastern University, Boston, USA
Alexandre Campo	PhD awarded on May 24, 2011 Now Senior Researcher at Social Ecology Unit, Université Libre de Bruxelles, Belgium
Rehan O'Grady	PhD awarded on October 7, 2010
Prasanna Balakrapash	PhD awarded on January 26, 2010

	Director of AI Programs at the Computing and Computational Sciences Directorate of the Oak Ridge National Laboratory, USA
Christos Ampatzis	PhD awarded on November 10, 2008 Now Head of Sector Space Technologies at Health and Digital Executive Agency of the European Commission, Brussels, Belgium
Shervin Nouyan	PhD awarded on September 24, 2008
Anders Christensen	PhD awarded on June 27, 2008 Now Professor at the University of Odense, Denmark
Krzysztof Socha	PhD awarded on May 9, 2008
Roderich Groß	PhD awarded on October 12, 2007 Now Associate Professor at the University of Sheffield, UK
Thomas H. Labella	PhD awarded on February 9, 2007
Leonora Bianchi	PhD awarded on June 29, 2006
Vito Trianni	PhD awarded on June 26, 2006 Now Tenured Senior Researcher at the Institute of Cognitive Sciences and Technologies, National Research Council (CNR), Rome, Italy
Mauro Birattari	PhD awarded on December 20, 2004 Now Research Director at the Belgian National Funds for Scientific Research (F.R.S.–FNRS), Belgium
Gianni Di Caro	PhD awarded on November 10, 2004 Now Professor at Carnegie Mellon, Dubai, Qatar
Christian Blum	PhD awarded on February 6, 2004 Now Senior Research Scientist at the Artificial Intelligence Research Institute (IIIA) of the Spanish National Research Council (CSIC), Bellaterra, Spain

Visiting PhD Students under supervision

Nazzari Alessandro (Politecnico di Milano, Italy)	Feb	2026	–	Aug	2026
Yuwei Zhang (Beihang University, Beijing, China)	Oct	2019	–	Apr	2021
Yating Zheng (Beijing Normal University, China)	Sep	2018	–	Dec	2020
Majd Kassawat (Universidad Jaume I, Castelló de la Plana, Spain)	Jun	2018	–	Dec	2018
Bernát Wiandt (Budapest University of Technology and Economics, Hungary)	Oct	2015	–	Mar	2016
Mikhail Afanasov (Politecnico di Milano, Italy)	Feb	2015	–	Apr	2015
Manuel Castillo (Universidad Politécnica de Madrid, Spain)	Feb	2013	–	May	2013
Yara Khaluf (Paderborn University, Germany)	Sep	2011	–	Dec	2011
Levent Bayindir (Middle East Technical University, Ankara, Turkey)	May	2009	–	Apr	2010
Francesco Sambo (Università di Padova, Italy)	Oct	2008	–	Jul	2009
Fabio Rossi (Università di Perugia, Italy)	Jun	2008	–	Aug	2008
Navneet Bhalla (University of Calgary, Calgary, Canada)	Oct	2007	–	Mar	2008
Alvaro Gutiérrez (Universidad Politécnica de Madrid, Spain)	Jun	2007	–	Nov	2007
Giacomo Di Tollo (Università di Chieti, Italy)	Jan	2007	–	Jun	2007
Jodelson Sabino (Pontificia Universitade Catòlica do Rio de Janeiro, Brazil)	Oct	2005	–	Sep	2006
Stephen Gilmoure (Macquarie University, Sydney, Australia)	Sep	2005	–	Oct	2005
Federico Vicentini (Politecnico di Milano, Italy)	Jun	2005	–	Dec	2005
Paola Pellegrini (Università di Venezia, Italy)	Jan	2005	–	Dec	2005
Michael Bonani (EPFL, Lausanne, Switzerland)	Sep	2004	–	Mar	2005
Elio Tuci (University of Sussex, UK)	Nov	2002	–	Jun	2003
Carlotta Piscopo (Univ. Pol. Catalunya, Spain)	Sep	2002	–	Aug	2003
Morgan Tamplin (University of Edinburgh, UK)	May	2002	–	Apr	2003
Vito Trianni (Politecnico di Milano, Italy)	Oct	2001	–	Sep	2002
Mark Zlochin (Technion, Haifa, Israel)	Jun	2001	–	May	2002
Andrea Roli (Università di Bologna, Italy)	Nov	2000	–	May	2001

PhD Committees

Foreign expert in the examination committee for the:

- PhD defense by Mario Coppola, University of Delft, The Netherlands, 2021.
- PhD defense by Alvaro Gutièrrez, University of Madrid, Spain, 2009.
- PhD defense by Stefan Janson, University of Leipzig, Germany, 2007.
- "Diplôme d'habilitation a diriger des recherches" defense by Christine Solnon, University of Lyon, France, Dec 6, 2005.
- PhD defense by Marco Wiering, University of Amsterdam, The Netherlands, Feb 17, 1999.
- PhD defense by Simon Perkins, University of Edinburgh, United Kingdom, Feb 1, 1999.
- "Diplôme d'habilitation a diriger des recherches" defense by Philippe Collard, University of Nice, France, Jan 22, 1999.
- PhD defense by Thomas Stützle, University of Darmstadt, Germany, Dec 9, 1998.
- PhD defense by Jean-Yves Donnart, Ecole Normale Superieure, Paris, France, Feb 16, 1998.
- "Diplôme d'habilitation a diriger des recherches" defense by Gilles Venturini, University of Tours, France, Dec 20, 1997.

- PhD defense by Olivier Michel, University of Nice-Sophia Antipolis, France, Nov 27, 1996.
- PhD defense by Dominique Snyers, University of Caen, France, Feb 28, 1996.

President of the examination committee for the:

- PhD defense by David Garzón Ramos, Univ. Libre de Bruxelles, Jan 13, 2025
- PhD defense by Muhammad Salman, Univ. Libre de Bruxelles, Aug 30, 2024
- PhD defense by Jonas Kuckling, Univ. Libre de Bruxelles, Apr 17, 2023
- PhD defense by Ken Hasselman, Univ. Libre de Bruxelles, Mar 30, 2023
- PhD defense by Antoine Ligot, Univ. Libre de Bruxelles, Mar 31, 2023
- PhD defense by Alberto Franzin, Univ. Libre de Bruxelles, Nov 10, 2021
- PhD defense by Lorenzo Garattoni, Univ. Libre de Bruxelles, Jan 15, 2021
- PhD defense by Federico Pagnozzi, Univ. libre de Bruxelles, Oct 18, 2019
- PhD defense by Leslie Pérez Cacéres, Univ. libre de Bruxelles, Nov 23, 2017
- PhD defense by Michael Allwright, University of Paderborn, Sep 8, 2017
- PhD defense by Gianpiero Francesca, Univ. Libre de Bruxelles, Apr 21, 2017
- PhD defense by Leonardo Teonácio Bezerra, Univ. Libre de Bruxelles, Jul 4, 2016
- PhD defense by Mohammed Saifullah Bin Hussin, Univ. Libre de Bruxelles, Dec 17, 2015
- PhD defense by Jérémie Dubois-Lacoste, Univ. Libre de Bruxelles, Apr 28, 2014

Member of the examination committee for the:

- PhD defense by Yating Zheng, Beijing Normal University, Dec 16, 2021
- PhD defense by Yuan Zhi, Université Libre de Bruxelles, Oct 18, 2019
- PhD defense by Koen Mertens, Katholieke Universiteit Leuven, Dec 8, 2006
- PhD defense by Elzbieta Malinowski, Université Libre de Bruxelles, Oct 2, 2006
- PhD defense by Gianluca Bontempi, Université Libre de Bruxelles, Dec 22, 1999
- PhD defense by Alessandro Saffiotti, Université Libre de Bruxelles, Oct 1, 1998

Invited tutorials

Tutorial speaker on "Introduction to Swarm Robotics" at "Summer School for Software Engineering in Robotics", Université Libre de Bruxelles, Brussels, Belgium, June 8, 2024.

Tutorial speaker on "Improving controllability, robustness and security of robot swarms" at "2021 Dutch Institute for Systems and Control (DISC) Summer School on Planning, Learning and Control for Multi-robot and Multi-agent Systems", Delft, Netherlands, (online) June 8, 2021.

Tutorial speaker on "An Introduction to Swarm Intelligence" at "Summer school on Complex Networks and Telecommunications", Como Italy, July 19, 2018.

Tutorial speaker on "A Gentle Introduction to Swarm Intelligence" at "SWARM 2015 -- The First International Symposium on Swarm Behaviour and Bio-Inspired Robotics", Kyoto, Japan, October 28-30, 2015.

Tutorial speaker on "Self-organizing Swarms" at "16th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2014)", Paderborn, Germany, September 28, 2014.

Tutorial speaker on "An Introduction to Swarm Intelligence" at "School of Computational Intelligence", Recife, Brazil, September 8, 2013.

Speaker on "Swarm Intelligence" at the "Fourth Annual French Complex Systems Summer School," Complex Systems Institute Paris Île-de-France, Paris, France (Aug 11–12, 2010).

Tutorial speaker on "An Introduction to Swarm Intelligence" at the "2nd International Seminar on New Issues in Artificial Intelligence," Universidad Carlos III de Madrid, Spain (Feb 6, 2009).

Tutorial speaker on "Ant Colony Optimization: An Introduction" at the "International Conference on Metaheuristics and Nature Inspired Computing," Hammamet, Tunisia (Oct 29, 2008).

Speaker on "Swarm intelligence with applications in optimization and robotics" at "DECOI2007–International Summer School on Collective Intelligence and Evolution", Amsterdam, The Netherlands (Aug 20, 2007).

Tutorial speaker on "An Introduction to Ant Colony Optimization and Swarm Intelligence" at the "Ninth International Conference on Parallel Problem Solving From Nature (PPSN IX)," Reykjavik, Iceland (Sep 10, 2006).

Tutorial speaker on "Ant Colony Optimization" at the "Sixth Metaheuristics International Conference (MIC 2005)," Vienna, Austria (Aug 22, 2005).

Tutorial speaker on "Fundamentals and Applications of Ant Colony Optimization" at the "IEEE Swarm Intelligence Symposium (IEEE-SIS 2005)," Pasadena, CA (Jun 8, 2005).

Tutorial speaker on "An Introduction to Ant Colony Optimization and Swarm Intelligence" at the "Eighth International Conference on Parallel Problem Solving From Nature (PPSN VIII)," Birmingham, UK (Sep 19, 2004).

Tutorial speaker on "Ant Colony Optimization and Swarm Intelligence: An Introduction" at the "Fourth International Workshop on Ant Colony Optimization and Swarm Intelligence (ANTS 2004)," Brussels, Belgium (Sep 5, 2004).

Tutorial speaker on "An Introduction to Ant Algorithms and Swarm Intelligence" at the "European Conference on Artificial Intelligence (ECAI 2002)," Lyon, France (22 Jul, 2002).

Tutorial speaker on "Ant Colony Optimization" at the EvoNet Summer School, Thessaloniki, Greece (Aug 27 – 1 Sep, 2001).

Tutorial speaker on "Ant Algorithms and Swarm Intelligence" at IJCAI-01 – Seventeenth International Joint Conference on Artificial Intelligence, Seattle, WA, USA (Aug 6, 2001).

Tutorial speaker on "Ant Colony Optimization and Swarm Intelligence" at the Santa Fe Complex Systems Summer School, Budapest, Hungary (25 Jul, 2001).

Tutorial speaker on "An Introduction to Ant Algorithms" at the "Joint tutorials of SAB 2000 and PPSN 2000," Paris, France (17 Sep, 2000).

Tutorial speaker on "Ant Algorithms and Swarm Intelligence: An Introduction" at the "European Conference on Artificial Intelligence (ECAI 2000)," Berlin, Germany (21 Aug, 2000).

Tutorial speaker on "Ant Algorithms" at the "2000 Genetic and Evolutionary Computation Conference (GECCO-2000)," Las Vegas, USA (9 Jul, 2000).

Tutorial speaker on "An Introduction to Ant Algorithms" at the "9th Belgian-Dutch Conference on Machine Learning (BENELEARN-99)," Maastricht, The Netherlands (Nov 5, 1999).

Tutorial speaker on "An Introduction to Ant Algorithms" at the "5th European Conference on Artificial Life (ECAL99)," Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland (Sep 13, 1999).

Tutorial speaker on "Introduction to Ant Colony Optimization" at the "1999 Genetic and Evolutionary Computation Conference (GECCO-99)," Orlando, FL, USA (14 Jul, 1999).

Tutorial speaker on "Artificial Life: The Swarm Intelligence Approach" at the "IEEE 1999 International Congress On Evolutionary Computation," Washington D.C., USA (Jul 6, 1999).

Tutorial speaker at the Artificial Intelligence and Beyond course, organized by the Flanders Language Valley Education and K.U. Leuven Campus Kortrijk, Apr 14, 1999.

Tutorial speaker on "Ant Colony Optimization" at the "Fifth International Conference on Parallel Problem Solving From Nature (PPSN V)," Amsterdam, The Netherlands (Sep 27, 1998).

Tutorial speaker on "Ant Colony Optimization" at the "Third Annual Genetic Programming Conference - GP-98," University of Wisconsin, Madison, WI, USA (Jul 22-25, 1998).

Teaching text books

Co-author of a text book in mechanics (Buccino, Dorigo, Garavaglia, Esercizi di Statica, Clup). The book has been used for at least ten years by engineering and architecture students at Politecnico of Milano. 1986.

AWARDS AND HONORS

Scientific prizes

2024: ITOR 2024 Best Paper Award in the category of Surveys and Tutorials for the paper: "Exposing the grey wolf, moth-flame, whale, firefly, bat, and antlion algorithms: Six misleading optimization techniques inspired by *bestial* metaphors, *International Transactions in Operational Research* 30 (2023), 2945-2971, DOI: 10.1111/itor.13176**.**

2016: IEEE CIS Evolutionary Computation Pioneer Award, awarded for the development of the ant colony optimization methodology by the Computational Intelligence Society of the Institute of Electrical and Electronics Engineers in July 2016 at the IEEE World Congress on Computational Intelligence, Vancouver, Canada (2,500 USD).

2015: IEEE Frank Rosenblatt Award, awarded by the Institute of Electrical and Electronics Engineers on December 9, 2015 at the IEEE Symposia on Computational Intelligence, Cape Town, South Africa (10,000 USD).

2015: Honorary Doctorate in Computer Science, awarded on April 21, 2015, by the University of Pretoria, South Africa.

2015: AAAI Best Student Video Award for the movie "Self-organized Collective Decisions in a Robot Swarm", awarded by the Association for the Advancement of Artificial Intelligence at the AAAI-2015 International Conference held in Austin Texas, January 29, 2015 (https://www.youtube.com/watch?v=5lz_HnOLBW4).

2015: Theoretical Computer Science 1st **Top Cited Article Award 2005–2014** for the paper "Ant Colony Optimization Theory: A Survey" published in *Theoretical Computer Science,* 344 (2–3): 243–278.

2014: Best Paper Award for the paper "Autonomous Construction with Compliant Building Material" at *13th International Conference on Intelligent Autonomous Systems – IAS-13*, co-authored with Touraj Soleymani, Vito Trianni, Michael Bonani and Francesco Mondada. Awarded on July 19, 2014.

2012: Prix FNRS-Wernaers 2012 for the movie "Swarmanoid, The Movie", Belgium.

2012: Botsker Award for Innovative Technology for the movie "Swarmanoid, The Movie", at the 2012 Robot Film Festival, New York, July 14, 2012.

2012: European Journal of Operational Research Top Cited Article Award 2007–2011 for the paper "Ant Colony Optimization for Continuous Domains" published in *European Journal of Operational Research, 185(3):1155-1173*.

2011: AAAI Best Video Award for the movie "Swarmanoid, The Movie", awarded by the Association for the Advancement of Artificial Intelligence at the AAAI-2011 International Conference held in San Francisco, California, August 8, 2011 ("Shakey" trophy; see http:// http://www.youtube.com/watch?v=M2nn1X9Xlps).

2011: Best Paper Award for the paper "An incremental Ant Colony Algorithm with Local Search for Continuous Optimization" at "GECCO'11 the 13th Annual Conference on Genetic and Evolutionary Computation", co-authored with Tianjun Liao, Marco Montes de Oca, Dogan Aydin and Thomas Stützle. See http://www.sigevo.org/gecco-2011/papers.html; awarded on July 16, 2011.

2007: Cajastur International Prize for Soft Computing "Mamdani Prize", awarded on November 27, 2007, by the Foundation for the Advancement of Soft Computing "in consideration of his outstanding contributions to the advancement of soft computing by developing the ant colony optimization (ACO) methodology" (20,000 EUR; see http://www.softcomputing.es/en/detailnew.php?cod=175).

2007: AAAI Best Video Award for the movie "Morphogenesis: Shaping Swarms of Intelligent Robots**",** awarded by the Association for the Advancement of Artificial Intelligence at the AAAI-2007 International Conference held in Vancouver, Canada, July 23, 2007 (100 CND and "Shakey" trophy; see http://www.aivideo.org/2007).

2007: IEEE TEC Outstanding Paper Award (bestowed in 2007) for the paper "Search Bias in Ant Colony Optimization: On the Role of Competition-Balanced Systems," IEEE Transactions on Evolutionary Computation, 9(2):159–174, 2005; awarded on June 3, 2008 (1,000 USD; see http:// http://ieee-cis.org/awards/recipients/#TECOutstandingPaperAward).

2005: Dr A. De Leeuw-Damry-Bourlart Award in Applied Sciences, awarded on November 22, 2005, by the Belgian Funds for Scientific Research for "his fundamental contributions to the foundation of the new, biologically inspired, area of swarm intelligence along with successful applications in operations research (through the invention of the ant colony optimization metaheuristic), in robotics (in the form of swarm-bots) and in artificial intelligence" (75,000 EUR; see http://www1.fnrs.be/3-financement/4-presse/00a.html).

2004: Best Paper Award awarded on March 12, 2004, at the Eighth Conference on Intelligent Autonomous Systems (IAS-8), Amsterdam, The Netherlands**,** for the paper: **"**Hole Avoidance: Experiments in Coordinated Motion on Rough Terrain", co-authored with Vito Trianni and Stefano Nolfi.

2003: European Prize "Marie Curie Excellence Award", awarded on November 5, 2003, by the European Commission for his work on "Ant colony optimization and ant algorithms" (50,000 EUR; see http://ec.europa.eu/research/fp6/mariecurie-actions/news/headline20_en.html).

1996: Italian Prize "Marco Somalvico" for Artificial Intelligence, awarded on September 27, 1996 by the Italian Association for Artificial Intelligence (5,000 EUR; see http://sites.google.com/a/aixia.it/vincitori-premi/).

Award committees

Chair of the 2018 IEEE EC Pioneer Award Committee

Co-chair of the 2017 IEEE EC Pioneer Award Committee

Member of the IEEE Frank Rosenblatt Award Committee (2007–2010)

Member of the IEEE Fellow Committee (2008, 2010, 2011)

Fellow

Named **Honorary Fellow of the Faculty of Computer Science at AGH University of Krakow** (April, 2026).

Named **Fellow of the Association for Computing Machinery (ACM)** (Jan, 2026).

Named **Fellow of the International Artificial Intelligence Industry Alliance (AIIA)** (May, 2025).

Named **Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA)** (July, 2021).

Named **Fellow of the Association for the Advancement of Artificial Intelligence (AAAI)** (January 27th, 2015).

Named **Fellow of the European Coordinating Committee for Artificial Intelligence (EurAI)** (June 28th, 2007).

Named **Fellow of the Institute of Electrical and Electronics Engineers (IEEE)** (January 1st, 2006).

Research awards

Partner of the project "COBRAS: Circular On-site Building with Robotic Assembly Swarms", funded by the European Union within the Horizon-EIC-2025-Path Finder Challenge program. 2026-2029 (36 months). Total grant: 4,000,000 EUR; IRIDIA share of grant: 1,000,000 EUR.

Scientist in charge and research director for an "Associate rechercher" tenure position awarded to Dr. Mary Katherine Heinrich by the F.R.S.-FNRS. Starting October 1, 2025.

Scientist in charge and research director for a "Chargé des recherches" post doctoral position awarded to Dr. Volker Strobel by the F.R.S.-FNRS. 2023–2026.

Principal investigator for the "Coopération bilatérale Région de Bruxelles-Capital – Québec" project titled "Recherches et développements collaboratives vers la nouvelle génération de l'intelligence multi-robots" awarded by Région de Bruxelles-Capitale. 2022–2023.

Scientist in charge and research director for a "Chargé des recherches" post doctoral position awarded to Dr. Andreagiovanni Reina by the F.R.S.-FNRS. 2020–2023.

F.R.S-FNRS research award for the project "An Heterogenous Self-Organising Robot Swarm". 2020-2021. Funding: 34,725 EUR.

FER (Fonds d'Encouragement à la Recherche) research award for the project "An Heterogenous Self-Organising Robot Swarm". 2020-2021. Funding: 56,125 EUR.

Scientist in charge and research director for a "Chargé des recherches" post doctoral position awarded to Dr. Mary Katherine Heinrich by the F.R.S.-FNRS. 2019–2022.

Principal investigator for the project "Mergeable Nervous Systems for Robot Swarms", funded by the Office for Naval Research Global. 2019-2022 (30 months). Funding: 209,000 USD.

Scientist in charge and research director for a Marie Curie postdoctoral fellowship awarded to Dr. Michael Allwright by the EC via the Marie Skłodowska-Curie Individual Fellowships program. 2019-2021 (24 months). Funding: 166,000 EUR.

Principal investigator for an "Action de Recherche Concertée" (ARC) research award for the project "Virtual Nervous Systems: Self-organised Hierarchical Control for Swarm Intelligence Systems". 2018-2023 (60 months). Funding: 700,000 EUR.

Scientist in charge and research director for a Marie Curie postdoctoral fellowship awarded to Dr. Eduardo Castelló Ferrer by the EC via the Marie Skłodowska-Curie Individual Fellowships program – Global fellowship in collaboration with MIT, Cambridge, MA. 2017-2020 (36 months). Total grant: 258,000 EUR; IRIDIA share of grant: 86,000 EUR.

Partner of the project "Robocom++: Rethinking Robotics for the Robot Companion of the future", funded by the FLAG-ERA programme. 2017-2020 (36 months). Total grant: 2,852,000 EUR; IRIDIA share of grant: 50,000 EUR

ERC Advanced Grant for the project "E-SWARM: Engineering Swarm Intelligence Systems" funded by the European Research Council. 2010-2015 (60 months). Funding: 2,016,000 EUR.

Partner of the project "ASCENS: Autonomic Service-Component Ensembles", funded by the European Union within the Future and Emerging Technologies (IST-FET) program. 2010-2014 (48 months). Total grant: 5,300,000 EUR; IRIDIA share of grant: 487,000 EUR.

Partner of the project "H2SWARM: Hierarchical Heterogeneous Swarm", funded by the European Science Foundation within the EUROCORES programme "Bio-inspired Engineering of Sensors, Actuators & Systems (EuroBioSAS)". 2011-2014. Total grant: 789,000 EUR; IRIDIA share of grant: 200,000 EUR

Partner of "MIBISOC: Medical Imaging Using Bio-inspired and Soft Computing", a Marie Curie International Training Network funded by the European Commission within the Marie Curie Activities program. 2009-2013 (48 months). Total grant: 3,464,000 EUR; IRIDIA share of grant: 387,000 EUR.

F.R.S-FNRS research award for the project "Swarm-Morph". 2009-2010. Funding: 15,000 EUR.

"Action de Recherche Concertée" (ARC) research award for the project "Meta-X: Metaheuristics for Complex Optimization Problems". 2008-2013 (60 months). Funding: 650,000 EUR.

Coordinator of the project "Evolving a collective consciousness for a swarm of pico-satellites" funded by the ARIADNA program of the European Space Agency. 2007 (4 months). Funding: 26,000 EUR.

FNRS research award for the project "Virtual Swarmanoid". 2007-2008. Funding: 40,000 EUR.

Coordinator of the project "Swarmanoid: Towards Humanoid Robotic Swarms", funded by the European Union within the Future and Emerging Technologies (IST-FET) program. 2006-2010 (48 months). Total grant: 2,500,000 EUR; IRIDIA share of grant: 970,000 EUR.

Coordinator of "COMP2SYS: COMPutational intelligence methods for COMPlex SYStems", an Early Stage Training project funded by the European Commission within the Marie Curie Activities program. 2004-2008 (48 months). Total grant: 1,000,000 EUR; IRIDIA share of grant: 1,000,000 EUR.

Partner of the "ECAgents: Embodied and Communicating Agents" project, funded by the European Union within the Future and Emerging Technologies (IST-FET)

program. 2004-2008 (48 months). Total grant: 5,000,000 EUR; IRIDIA share of grant: 250,000 EUR.

Principal investigator for an "Action de Recherche Concertée" (ARC) research award for the project "ANTS: Towards a Foundation of Ant Algorithms". 2003-2008 (60 months). Funding: 500,000 EUR.

FNRS research award for the project "Virtual Swarm-bots". 2002-2003. Funding: 37,000 EUR.

Coordinator of the project "Swarm-bots: Swarms of self-assembling artefacts", funded by the European Union within the Future and Emerging Technologies (IST-FET) program. 2001-2005 (42 months). Total grant: 1,970,000 EUR; IRIDIA share of grant: 800,000 EUR.

Coordinator of the European "Metaheuristics Network" funded by the European Union within the Improving Human Potential program. 2000-2004 (48 months). Total grant: 1,200,000 EUR; IRIDIA share of grant: 360,000 EUR.

Coordinator of the European "EvoNeuroFuzzy: Training in Soft Computing Techniques for Optimization and Control", a Marie Curie Training Site" funded by the European Union within the Improving Human Potential program. 2000-2004 (48 months). Funding: 158,000 EUR.

FNRS research award for building a "Beowulf" style cluster of PCs. 2000-2001. Funding: 17,000 EUR.

Scientist in charge and research director for

- a Marie Curie postdoctoral fellowship awarded to Mr. Gianni Di Caro by the EC via the Improving Human Potential program (Nov 2001-Apr 2003). Funding: 114,000 EUR.
- a Marie Curie postdoctoral fellowship awarded to Dr. Joshua Knowles by the EC via the Improving Human Potential program (Oct 2001- Sep 2003). Funding: 152,000 EUR.
- a Marie Curie postdoctoral fellowship awarded to Dr. Hussain Saleh by the EC via the Improving Human Potential program (Oct 2001- Sep 2003). Funding: 152,000 EUR.
- a Marie Curie postdoctoral fellowship awarded to Dr. Stefka Fidanova by the EC via the Improving Human Potential program (Nov 2000-Oct 2002). Funding: 152,000 EUR.
- a Marie Curie postdoctoral fellowship awarded to Dr. Nicolas Meuleau by the EC via the Improving Human Potential program (Nov 2000-Nov 2001). Funding: 152,000 EUR.
- a Marie Curie doctoral fellowship awarded to Thomas Stützle by the EC via the TMR program (Dec 1998-Feb 2000). Funding: 75,000 EUR.
- a Marie Curie doctoral fellowship awarded to Gianni Di Caro by the EC via the TMR program (Aug 1996-Feb 1999). Funding: 150,000 EUR.

Local coordinator (IRIDIA, since 2002) for the Network of Excellence in Complex Systems (Exystence) funded by the Commission of the European Community.

Local coordinator (IRIDIA, since 1996) for the Network of Excellence in Evolutionary Computation (EvoNet) funded by the Commission of the European Community.

Local coordinator (IRIDIA, since 1996) for the Network of Excellence in Machine Learning (MLnet) funded by the Commission of the European Community.

Local coordinator (1990-92, PM AI&R, Politecnico di Milano) of the activities which led first to the formulation of a proposal, and then to the administration of the project,

for the Italian "Progetto Finalizzato Informatica e Calcolo Parallelo - Obiettivo Processori Dedicati."

Various

Appointed as "IEEE Computational Intelligence Society Distinguished Lecturers Program" speaker for the 2011-13 period.

"Swarm-bots", a FET project funded by the Commission and coordinated by Dr. Dorigo (2001-2005), was selected as one of the **success stories** of the Future and Emerging Technologies programme.

Dr. Dorigo's Marie Curie fellowship results have been selected by the European Commission as one of the "**Marie Curie Fellowships Success Stories**" (document EUR 17763 published by the European Commission in December 1997).

Elected **Senior Member** in the IEEE (Institute of Electrical and Electronics Engineers) on Sep 28, 1996.

Invited talks

Invited plenary speaker on "Bridging Centralized and Decentralized Control in Robot Swarms through Self-Organizing Hierarchies" at "7th IEEE International Conference on Autonomic Computing and Self-Organizing Systems - ACSOS 2026", Cesena, Italy, September 9, 2026.

Invited plenary speaker on "Self-Organizing Nervous System for Robot Swarms" at "PP-RAI'2026 - 7th Polish Conference on Artificial Intelligence", Krakow, Poland, April 20, 2026.

Invited plenary speaker on "Self-organizing Robot Swarms" at "icSoftComp2025 - 7th International Conference on Soft Computing and its Engineering Applications", Hanoi, Vietnam, Online, December 9, 2025.

Invited Lecture on "Taming Self-Organization in Robot Swarms" at "KIOS Distinguished Lecture Series", University of Nicosia, Cyprus, November 28, 2025.

Invited keynote speaker on "From Self-Organization to Control: Steering Robot Swarms" at "ECAI 2025 – 28th European Conference on Artificial Intelligence", University of Bologna, Bologna, Italy, October 28, 2025.

Invited keynote speaker on "Self-Organizing Robot Swarms" at "UCNC 2025 – 22th International Conference on Unconventional Computation and Natural Computation", Université Côte d'Azur, Nice, France, September 15, 2025.

Invited keynote speaker on "Self-Organizing Nervous System for Robot Swarms" at "IEEE SIMPAR – 7th IEEE International Conference on Simulation, Modeling, and Programming for Autonomous Robots", CNR, Palermo, Italy, April 16, 2025.

Invited speaker on "Self-Organizing Nervous System for Robot Swarms" at "SWARM2024 – 8th International Symposium on Swarm Behavior and Bio-Inspired Robotics 2024", Kyoto University, Japan, September 18, 2024.

Invited speaker on "From social insects to social robots", BrIAS Forum on Robotics in Agriculture – Where we are, where we are going, Brussels Institute of Advanced Studies, Brussels, Belgium, February 16, 2024.

Invited plenary speaker on "Self-Organizing Nervous System for Robot Swarms", **Workshop on Swarm intelligence**, Zurich, Switzerland, September 20, 2023.

Invited plenary speaker on "Self-Organizing Nervous System for Robot Swarms", 12th International Conference on Biomimetic and Biohybrid Systems, Living Machines 2023, Genoa, Italy, July 12, 2023.

Invited plenary speaker on "Self-Organizing Nervous System for Robot Swarms", 2nd VALGRAI meeting, Valencia, Spain, July 4, 2023.

Invited plenary speaker on "Mergeable Nervous System for Robot Swarms", 10th International Conference on Robot Intelligence Technology and Applications (RiTA 2022), Online, Griffith University (Gold Coast Campus), Australia, December 8, 2022.

Invited plenary **speaker** on "Self-organized Nervous Systems for Robot Swarms" 2nd Innovation Forum on Intelligent Computing, Zhejiang Lab and Science/Science Robotics/AAAS, Hangzhou City, Online, China, October 20, 2022.

Invited plenary speaker on "Ants, optimization and robots", 13th International Scientific Conference on Neuroethics and 8th Conference of the Italian Society for Neuroethics (SINe), Neuroethics in a Time of Global Crises, Milano, Italy, May 12, 2022.

Invited plenary speaker on "Mergeable Nervous System for Robot Swarms", Thinking Swarm Workshop, Online, Australia, April 24, 2022.

Invited plenary speaker on "Improving controllability, robustness and security of robot swarms" at "13th World Congress on Nature and Biologically Inspired Computing", Online, December 16, 2021.

Invited plenary speaker on "Towards robust and secure robot swarms" at "3rd International Symposium on New Trend in Computational Intelligence", Qingdao, China, Online, December 10, 2021.

Invited plenary speaker on "Towards robust and secure robot swarms" at "CEC 2021 – IEEE Congress on Evolutionary Computation", Kraków, Poland, Online, June 29, 2021.

Invited plenary speaker on "Adding security to robot swarms" at "R2T2: Robotics Research for Tomorrow's Technology seminar", Online, March 10, 2021.

Invited speaker on "Mergeable Nervous Systems for Robot Swarms" at "ONR's Virtual Early Applied Research D&I Swarm Robotics Workshop", Online, October 15, 2020.

Invited speaker on "Adding Security to Robot Swarms" at "ONR Global Swarm Intelligence and Autonomy Portfolio Showcase", Online, June 25, 2020.

Invited plenary speaker on "Do We Need a Blockchain in Swarm Robotics?" at "2019 Symposium on Blockchain for robotic systems", MIT Media Lab, Cambridge, MA, December 5, 2019.

Invited keynote speaker on "Collective Decision Making: The Best-of-n Problem in Robot Swarms" at "Swarm Intelligence in AI and Alife workshop at SWARM 2019", Okinawa, Japan, November 22, 2019.

Invited plenary speaker on "Mergeable Nervous Systems and Blockchain-based Smart Contracts for Robot Swarms" at "SWARM 2019: The 3rd International Symposium on Swarm Behavior and Bio-Inspired Robotics", Okinawa, Japan, November 22, 2019.

Invited keynote speaker on "Swarm Robotics: Recent Results and New Research Directions" at "EPIA2019 – 19th EPIA Conference on Artificial Intelligence", Vila Real, Portugal, September 4, 2019.

Invited keynote speaker on "Coordination in Robot Swarms" at "17th International Conference on Practical Applications of Agents and Multi-Agent Systems (PAAMS'19)", Avila, Spain, June 28, 2019.

Invited keynote speaker on “Controlling Robot Swarms” at “LION13 – Learning and Intelligent OptimizatioN”, Chania, Greece, May 31, 2019.

Invited keynote speaker on “Swarm Robotics: Recent Results and New Research Directions” at the “Second Nature Conference on Flexible Electronics”, Xi’an, China, October 14, 2018.

Invited keynote speaker on “Swarm Robotics” at the conference “Biological Transformation in Manufacturing - Futuras in Res”, Fraunhofer, Berlin, Germany, June 29, 2018.

Invited keynote speaker on “Swarm Robotics Research at IRIDIA” at the ULB-WASEDA workshop on "Man and biosphere", Brussels, Belgium, June 21, 2018.

Invited keynote speaker on “Beyond Pure Self-organization in Robot Swarms” at the conference “Conference on Collective Behavior”, Trieste, Italy, May 7, 2018.

Invited keynote speaker on “Collective Decision Making” at the workshop “Cross-disciplinary approaches for building intelligent swarms of drones”, Toulouse, France, November 13, 2017.

Invited keynote speaker on “Swarm Robotics Research at the IRIDIA AI lab” at the Belgian Dutch Conference on Artificial Intelligence (BNAIC), Groningen, The Netherlands, November 9, 2017.

Invited keynote speaker on “Collective Decision Making: The Best-of-n Problem in Robot Swarms” at “IEEE SASO 2016 -- 10th IEEE International Conference on Self-Adaptive and Self-Organizing Systems”, Augsburg, Germany, Sep 13, 2016.

Invited keynote speaker on “Swarm Robotics: Current Issues and Some Novel Research Directions” at “IEEE WCCI 2016 – IEEE World Congress on Computational Intelligence”, Vancouver, Canada, July 27, 2016.

Invited keynote speaker on “La cooperazione in sciami di robot” at “Darwin Day 2016”, Università di Parma, Italy, March 11, 2016.

Plenary speaker on “Controlling Swarms of Cooperating Robots” at “IEEE SSCI 2015 -- IEEE Symposium Series on Computational Intelligence”, Cape Town, South Africa, December 7-10, 2015.

Invited speaker on “Controlling Swarms of Cooperating Robots” at “WIVACE 2015 -- Italian Workshop on Artificial Life and Evolutionary Computation”, Bari, Italy, September 23, 2015.

Invited keynote speaker on “Swarm Robotics Research at IRIDIA” at “TAROS 2015 -- Towards Autonomous Robotic Systems”, Liverpool, UK, Sep 9, 2015.

Invited speaker on “Swarm Robotics Research at IRIDIA” at the Department of Computer Science, University of Pretoria, South Africa, April 20, 2015.

Invited keynote speaker on “Swarm Intelligence in the Natural and Artificial Worlds” at “ASCENS Spring School on Engineering Collective Autonomic Systems”, Lucca, Italy, March 26, 2015.

Invited speaker on “Swarm robotics” at “Giornata Scientifica in Memoria di Alberto Bertoni”, Università degli Studi di Milano, Italy, February 13, 2015.

Invited keynote speaker on “Swarm-bots and Swarmanoid” at “The 3rd International Conference on the Theory and Practice of Natural Computing (TPNC 2014)”, Granada, Spain, December 9, 2014.

Invited keynote speaker on “Swarm-bots and Swarmanoid” at “EUROMICRO DSD/SEAA 2014”, Verona, Italy, August 28, 2014.

Invited keynote speaker on "The Swarm-bots and Swarmanoid Experiments in Swarm Robotics" at "IEEE International Conference on Autonomous Robot Systems and Competitions (IEEE ICARSC)", Espinho, Portugal, May 14-15, 2014.

Invited speaker on "About swarm intelligence and swarm robotics" at "I'm seeing in the Brain", Alumni Ecole Polytechnique de Bruxelles, Université Libre de Bruxelles, Brussels, April 30, 2014.

Invited speaker on "Swarm Intelligence in the Natural and Artificial worlds" at "BIOCITIES lecture series", The Bartlett School of Architecture, University College London, February 21, 2014.

Invited keynote speaker on "Swarm-bots and Swarmanoid" at "1st BRICS Countries Congress (BRICS-CCI) and 11th Brazilian Congress (CBIC) on Computational Intelligence", Recife, Brazil, September 11, 2013.

Invited keynote speaker on "Swarmanoid Robots" at "Istanbul Technical University Robotics Olympics – ITURO 2013", Istanbul, Turkey, April 12, 2013.

Invited keynote speaker on "Swarm Intelligence" at "6th IEEE, International Conference on Intelligent Systems", Sofia, Bulgaria, September 8, 2012.

Invited keynote speaker on "Swarm Robotics" at "Unconventional Computation and Natural Computation 2012", University of Orleans, France, September 6, 2012.

Whitehead Lecture on "Swarm-bots and Swarmanoid: Two Experiments in Embodied Swarm Intelligence", series in Cognition, Computation and Creativity at Goldsmiths College, University of London, UK, March 14, 2012.

Invited speaker on "Swarm-bots and Swarmanoid: Two Experiments in Swarm Robotics" at "2011 IEEE/SICE International Symposium on System Integration, SII2011", Kyoto University, Japan, December 20-22, 2011.

Invited speaker on "Swarm Intelligence" at North Rhine-Westphalia Academy for Sciences and Arts, Düsseldorf, Germany, November 16, 2011.

Invited speaker on "Intelligenza di sciame e robotica" at the "Festival della Scienza di Genova", Italy, October 30, 2011.

Invited speaker on "A gentle introduction to swarm intelligence" a the "IRIBHM Interdisciplinary Biomedical Research Seminars", ULB, Brussels, Belgium, September 29, 2011.

Invited speaker on "A gentle introduction to swarm intelligence" a the Interdisciplinary Biomedical Research Seminars, IRIBHM, ULB, Brussels, Belgium, September 29, 2011.

Invited speaker on "Swarm robotics: l'intelligenza degli insetti sociali applicata al controllo di gruppi di robot" at the ICT Institute, Politecnico di Milano, April 19, 2011.

Invited speaker on "Swarm intelligence and swarm robotics" at the ERG Séminaire, Brussels, Belgium, February 4, 2011.

Invited speaker on "Embodied Swarm Intelligence" at the European Research Council, Brussels, Belgium, January 28, 2011.

"Neujahrempfang" lecturer on "Swarm Intelligence" at Universität Paderborn, Germany, January 16, 2011.

Simon Stevin Lecture on "Swarm Intelligence" at KUL, Leuven, Belgium, December 16, 2010.

Invited speaker on "Embodied Swarm Intelligence" at Center for Advanced Studies, Ludwig-Maximilians-Universität, Munich, Germany, October 11, 2010.

Invited speaker on "Swarm Intelligence in the Natural and Artificial Worlds" at "Studium Generale", Maastricht University, The Netherlands, March 15, 2010.

Invited keynote speaker on "Swarms of Physically Cooperating Robots" at "Congress of the Italian Association for Artificial Intelligence", Reggio Emilia, Italy, December 10, 2009.

Invited keynote speaker on "From social insects to swarms of robots: The Swarm-bots experiment" at "Inside", Lisbon, Portugal, November 7, 2009.

Invited keynote speaker on "Swarm Robotics" at "Modelling Cognitive Behaviour - 2009", Bristol, UK, November 5, 2009.

Invited keynote speaker on "Swarms of cooperating robots" at "ICAIS'09 – International Conference on Adaptive and Intelligent Systems", Klagenfurt, Austria, September 26, 2009.

Invited keynote speaker on "Swarm-bots and Swarmanoid: Two experiments in embodied swarm intelligence" at the "2009 IEEE/WIC/ACM International, Conference on Intelligent Agent Technology (IAT 2009) and 2009 IEEE/WIC/ACM International Conference on Web Intelligence (WI 2009)," Milano, Italy, September 17, 2009.

Invited keynote speaker on "Embodied Swarm Intelligence: The Swarm-bot and the Swarmanoid Experiments" at "ICANN 2009 – The 19th International Conference on Artificial Neural Networks", Limassol, Cyprus, September 15, 2009.

Invited keynote speaker on "Swarm Intelligence, Swarm-bots and Swarmanoids" at "ICCSA 2009 – The 3rd International Conference on Complex Systems and Applications", University of Le Havre, France, June 29, 2009.

Invited keynote speaker on "Morphogenesis in Swarm-bots" at "MEW2009 - First International Workshop on Morphogenetic Engineering", Complex Systems Institute, Paris, June 19, 2009.

Invited plenary speaker on "Swarm Intelligence" at "Biowire09 – From Self-organisation in Living Systems to Sensor and Wireless Networks", Cambridge, UK, June 11, 2009.

Invited speaker on "Swarm-bot: An Experiment in Embodied Swarm Intelligence" at "Informatikkolloquium", Universität Paderborn, Germany, May 5, 2009.

Invited keynote speaker on "Swarm-bots and Swarmanoids" at "EURON 2009 – European Robotics Research Network Annual Meeting", Leuven, Belgium, April 7, 2009.

Invited speaker on "The Swarm-bot Experience in Swarm Robotics" at "Seminar series on Systems and Control", Université Catholique de Louvain, Belgium, March 31, 2009.

Invited keynote speaker on "Swarm-bots" at "ICAART 2009 – International Conference on Agents and Artificial Intelligence", Porto, Portugal, January 20, 2009.

Invited plenary speaker on "Swarm intelligence and swarm-bots" at "Celebration for the 20 years of the Istituto Dalle Molle di studi sull'intelligenza artificiale – IDSIA", Palazzo dei Congressi, Lugano, Switzerland, October 24, 2008.

Invited plenary speaker on "Swarm robotics: the coordination of robots via swarm intelligence principles" at "BICC 2008 – 2nd IFIP Conference on Biologically Inspired Collaborative Computing", Milano, Italy, September 8, 2008.

Invited plenary speaker on "The Swarm-bot: a swarm of self-assembling robots" at "IPMU 2008 – 12th International Conference Information Processing and

Management of Uncertainty for Knowledge-Based Systems", Malaga, Spain, June 26, 2008.

Invited plenary speaker on "Swarm Intelligence and Swarm Robotics: The Swarm-bot Experiment" at "ICINCO 2008 – International Conference on Informatics in Control, Automation and Robotics", Funchal, Madeira, Portugal, May 12, 2008.

Invited plenary speaker on "Swarm Robotics: The Application of Swarm Intelligence Principles to the Control of Swarms of Robots" at "BIONETICS 2007 – 2nd International Conference on Bio-Inspired Models of Network, Information, and Computing Systems", Budapest, Hungary, December 10, 2007.

Invited plenary speaker on "Swarm-bots: An Experiment in Swarm Robotics" at "NICSO 2007 – Second International Workshop on Nature Inspired Cooperative Strategies for Optimization", Acireale (Catania), Italy, November 8, 2007.

Invited plenary speaker on "Swarms of Self-assembling Robots" at the "International Conference on Complex Systems–Engineering Environment-Mediated Multiagent Systems", Dresden, Germany, October 5, 2007.

Invited speaker on "Swarm-bots: Swarms of Self-assembling Robots" at the "Summer research institute–EPFL", Lausanne, Switzerland, July 3, 2007.

Invited plenary speaker on "Swarm-bots: Swarms of Self-assembling Robots" at the "International Symposium on Innovations in Intelligent Systems and Applications–INISTA 2007", Istanbul, Turkey, June 21, 2007.

Invited speaker on "The Swarm-bot experiment in swarm robotics" at the University of Amsterdam, Amsterdam, The Netherlands, November 20, 2006.

Invited speaker on "Swarm intelligence and its use in swarm robotics" at the European Space Agency, Noordwijk, The Netherlands, November 17, 2006.

Invited plenary speaker on " An experiment in swarm robotics: the swarm-bot" at the "2nd International Workshop on Swarm Robotics", Rome, Italy, September 30, 2006.

Invited plenary speaker on "Swarms of self-assembling robots" at the "IEEE World Congress on Computational Intelligence", Vancouver, Canada, July 18, 2006.

Invited plenary speaker on "The ant colony optimization metaheuristic" at the "3rd International Conference on Pedestrian and Evacuation Dynamics", Vienna, Austria, September 30, 2005.

Invited plenary speaker on "The swarm-bot approach to swarm robotics" at the "The 3rd International Symposium on Autonomous Minirobots for Research and Edutainment (AMiRE 2005)", Awara-Spa, Fukui, Japan, September 21, 2005.

Invited plenary speaker on "Swarm-bots: Self-assembling swarms of robots" at the " ECAL 2005 – Eighth European Conference on Artificial Life, Canterbury, UK, Sep 7, 2005.

Invited plenary speaker on "Swarm-bot: An experiment in swarm robotics" at the "IEEE Swarm Intelligence Symposium", Pasadena, California, June 8, 2005.

Invited speaker on "Swarm intelligence: State-of-the-art and future challenges" at the "Future and Emerging Technologies Unit of the European Commission", Brussels, Belgium, May 23, 2005.

Invited speaker on "A gentle introduction to the ant colony optimization metaheuristic" at the "5th Regensburg Symposium on Evolutionary Biology "Ant algorithms", Regensburg, Germany, May 2, 2005.

Invited speech on "Swarm-bot: A novel type of self-assembling robot" at the "Workshop on Cooperative Robotics - International Conference on Robotics and Automation", Barcelona, Spain, April 22, 2005

Invited speaker on "Artificial ants solve network optimization problems" within the series of conferences titled "Evolution of Complex Networks" at Barcelona's Museum of Sciences, Feb 23, 2005, Barcelona, Spain.

Invited speaker at the "Optimization 2004" conference, Lisbon, Portugal, Jul 28, 2004.

Invited speaker at the "Research cluster on complex systems", Imperial College London, UK, Apr 1, 2004.

Invited speaker at the "Open Systems Conference", Rotterdam, The Netherlands, Nov 27, 2003.

Invited speaker at the "Research cluster on swarm intelligence", Sheffield, UK, Nov 11, 2003.

Invited speaker at the "Second International Conference on Evolutionary Multi-Criterion Optimization (EMO 2003)" and "First IFAC International Conference on Intelligent Control and Signal Processing (ICONS 2003)", Faro, Portugal, Apr 10, 2003.

Invited speaker at the "Third International Workshop on Engineering Societies in the Agents World" at Universidad Rey Juan Carlos, Madrid, Spain, Sep 16–17, 2002.

Invited speaker at the two-day seminar on "Collective Intelligence" at University of Fribourg, Switzerland, Feb 25–26, 2002.

Invited speaker at the FNRS workshop on "Métaheuristiques et traitement de problèmes combinatoires" at Université Libre de Bruxelles, Belgium, Feb 7, 2002.

Invited speaker (by the Portuguese Minister for Science and Technology) on "Social intelligence: from natural to artificial systems" within the series of conferences titled "Positions of knowledge: some critical thresholds," Jan 25, 2002, Lisbon, Portugal.

Invited speaker at the "6th European Conference on Artificial Life," Prague, Czech Republic, Sep 10-14, 2001.

Invited speaker at the "Tenth Turkish Symposium on Artificial Intelligence and Neural Networks," Famagusta, North Cyprus, Jun 21-22, 2001.

Invited speaker at "ETAPS 2001 – MMAABS: Workshop on Models and Methods of Analysis for Agent Based Systems," Genova, Italy, Apr 2-6, 2001.

Invited speaker on "Ant algorithms: Multi-agent systems inspired by the observation of ant colony behavior" at the "Fourth International Conference on Autonomous Agents (Agents 2000)," Barcelona, Spain, June 3-7, 2000.

Invited speaker at the "7èmes Journées Francophones d'Intelligence Artificielle et Systèmes Multi-Agents (JFIADSMA'99)," Saint-Gilles, Ile de la Réunion, France, Nov 8-10, 1999.

Invited speaker at the "First USA-Italy Conference on Applied Neural and Cognitive Sciences," Boston, MA, Oct 4, 1999.

Invited speaker at the "EUROGEN99," Jyväskylä, Finland, Jun 2, 1999.

Invited key-note speaker at "Real World Intelligence joint WG meeting", AIST Hall, Tsukuba, Japan, Mar 4, 1998.

Invited plenary talk at "IEE Colloquium on Self-Learning Robots II: Bio-Robotics", Savoy Place, London, UK, Feb 12, 1998.

Invited talk at "NSF Workshop on Reinforcement Learning", Hilltop House, Harper's Ferry, MD, Apr 12–14, 1996.

Invited plenary talk at "IEE Colloquium on Self-learning robots", Savoy Place, London, UK, Feb 12, 1996.

Invited plenary talk at "BENELEARN-95, 5th Belgian-Dutch Conference on Machine Learning," Université Libre de Bruxelles, Belgium, Sep 15, 1995.

Invited talk at "SFI Working Group on Learning and Adaptation in Robots and Situated Agents", Santa Fe Institute, NM, May 9–13, 1993.

Fellowships

Visiting professor three-months fellowship given by the CSIC, Spanish Scientific Research Council to visit the Institut d'Investigacio en Intel.ligencia Artificial, Bellaterra, Catalonia, Spain. May 2002 - Jul 2002.

Post-doc fellowship given by the Swiss National Research Fund, 1996–1998 (24 months), at IDSIA, Istituto Dalle Molle di Studi sull'Intelligenza Artificiale, Lugano, Switzerland (stopped after 5 months to accept a permanent position offered by the Belgian FNRS).

Post-doc fellowship given by the European Community within the program "Human, Capital and Mobility," Aug 1994 - Jul 1996 (24 months) at IRIDIA, Université Libre de Bruxelles, Bruxelles, Belgium.

Senior visiting scientist fellowship given by the University of Berkeley and CNR, March-April 1996 (two months), at the International Computer Science Institute, Berkeley, California.

Visiting scientist fellowship given by the University of Nice, April 1995 (one month), at the I3S laboratory, CNRS, Sophia Antipolis, France.

Post-doc fellowship given by "NATO-CNR," Jul 1993 - May 1994 (11 months) at IRIDIA, Université Libre de Bruxelles, Bruxelles, Belgium.

Post-doc fellowship given by the University of Berkeley and CNR, April 1992 - March 1993 (12 months), at the International Computer Science Institute, Berkeley, California.

Three years fellowship by the Italian Government to join the doctoral program in Systems and Information Engineering at Politecnico di Milano, Italy. Nov 1988 - Oct 1991.

ORGANIZATION ACTIVITIES

Editorial activities

Editor-in-Chief for the journal "Swarm Intelligence" (from 2007, Vol.1, No.1 to 2023, Vol.17, No.2).

Associate editor for the journals:

- *ACM Transactions on Autonomous and Adaptive Systems* (from 2006,Vol.1, No.1 to 2018, Vol.13, No.2)
- *ACM Transactions on Cyber-Physical Systems* (from 2017, Vol.1, No.1 to 2018, Vol.2, No.1)
- *Cognitive Systems Research* (from 1999, Vol.1, No.1, to 2015, Vol.33)
- *IEEE Transactions on Cognitive and Developmental Systems* (from 2009, Vol.1, No.1 to 2016, Vol.8, No.4)
- *IEEE Transactions on Cybernetics* (from 1993, Vol.23, No.3, to Vol.51, No.12, 2021)
- *IEEE Transactions on Evolutionary Computation* (from 1997, Vol.1, No.1, to 2020, Vol.24, No.6)
- *Journal of Heuristics* (since 1999, Vol.5 to Vol. 12, 2006)

Member of the Editorial Board of the journals:

- *Adaptive Behavior* (since 1996, Vol. 4, No.1)
- *AI Communications* (since 2000, Vol.13, No.3)
- *Artificial Life* (since 2001, Vol.7, No.1)
- *Evolutionary Computation* (since 1993, Vol.1, No.1)
- *Genetic Programming and Evolvable Machines* (since 1999, Vol.1, No.1)
- *Information Sciences* (from 2004, Vol.159, No.1 to 2008, Vol.178, No.11)
- *International Journal of Innovative Computing & Applications* (since 2007, Vol.1, No.1)
- *Paladyn. Journal of Behavioral Robotics* (since 2010, Vol.1, No.1)
- *SPJ Intelligent Computing* (since 2022, Vol. 1)
- *Theoretical Computer Science* (since 2015, Vol. 598)

Member of the Editorial Board of SpringerBriefs series in Intelligent Systems

Member of the Advisory Board for:

- *Science Robotics* journal, since 2025
- *Artificial Life and Robotics* journal, since 2024
- "Studies in Computational Intelligence" Book Series, Springer, since 2024

Guest editor of the special issues on:

- Special Issue on ANTS 2022, Swarm Intelligence (2024, Vol. 18, No. 2-3).
- Special Issue on ANTS 2020, Swarm Intelligence (2021, Vol. 15, No. 4).
- Special Issue on ANTS 2018, Swarm Intelligence (2019, Vol. 13, No. 3-4).
- Special Issue on ANTS 2016, Swarm Intelligence (2017, Vol. 11, No. 3-4).
- Special Issue on ANTS 2014, Swarm Intelligence (2015, Vol. 9, No. 2-3).
- Special Issue on ANTS 2012, Swarm Intelligence (2013, Vol .7, No. 2-4).
- Special Issue on ANTS 2010, Swarm Intelligence (2011, Vol. 5, No. 3-4 & 2012, Vol. 6, No.1).
- Swarm Robotics, *Autonomous Robots* (2004, Vol.17, No.2–3).

- Ant Colony Optimization, *IEEE Transactions on Evolutionary Computation* (August 2002, Vol.6, No.4).
- Ant Algorithms, *Future Generation Computer Systems* (June 2000, Vol. 16, No. 8).
- Learning Autonomous Robots, *IEEE Transactions on Systems, Man, and Cybernetics–Part B* (June 1996, Vol.26, No.3).

Member of the Special Review Panel of the special issues on:

- Biomimetic Robotics, *Robotics and Autonomous Systems*, Vol. 30, No. 1–2, 2000.
- Learning Autonomous Robots, *Autonomous Robots*, Vol.5, No. 3, and *Machine Learning*, Vol. 31, Nos. 1–3, 1998.
- Robot Learning: The New Wave, *Robotics and Autonomous Systems*, Vol. 22, Nos. 3–4, 1997.

Conference organization

Honorary Chair for the conferences:

- ANTS2026 – Fifteenth International Conference on Swarm Intelligence, Darmstadt, Germany (Jun 8–10, 2026).
- ANTS2024 – Fourteenth International Conference on Swarm Intelligence, Konstanz, Germany (Oct 9–11, 2024).
- IEEE SSCI – 2015 IEEE Symposium Series on Computational Intelligence, Cape Town, South Africa (Dec 7–10, 2015).
- 1st BRICS Countries Congress (BRICS-CCI) and 11th Brazilian Congress (CBIC) on Computational Intelligence, Recife, Brasil (Sep 8–11, 2013).
- IEEE Swarm – Second IEEE International Symposium on Swarm Intelligence, Pasadena, California (Jun 8–10, 2005).

General Chair for the conferences:

- ANTS2022 – Thirteenth International Conference on Swarm Intelligence, Malaga, Spain (Nov 2–4, 2022).
- ANTS2020 – Twelfth International Conference on Swarm Intelligence, Barcelona, Spain (Oct 26–28, 2020).
- Symposium on Blockchain for Robotic Systems, MIT Media Lab, Cambridge, MA, USA (Dec 5, 2019).
- Symposium on Blockchain for Robotic Systems, MIT Media Lab, Cambridge, MA, USA (Dec 4, 2018).
- ANTS2018 – Eleventh International Conference on Swarm Intelligence, ISTC-CNR, Rome, Italy (Oct 29–31, 2018).
- Swarm Robotics – Pushing the State of the Art, ISTC-CNR, Rome, Italy (Oct 25–26, 2018).
- ANTS2016 – Tenth International Conference on Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 7–9, 2016).
- ANTS2014 – Ninth International Conference on Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 10–12, 2014).
- ANTS2012 – Eighth International Conference on Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 12–14, 2012).
- ANTS2010 – Seventh International Conference on Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 8–10, 2010).
- ANTS2008 – Sixth International Conference on Ant Colony Optimization and Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 22–24, 2008).

- IEEE SIS07 – IEEE Swarm Intelligence Symposium, Hilton Hawaiian Village, Honolulu, Hawaii (April 1–5, 2007).
- ANTS2006 – Fifth International Workshop on Ant Colony Optimization and Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 4–7, 2006).
- ANTS2004 – Fourth International Workshop on Ant Colony Optimization and Swarm Intelligence, Université Libre de Bruxelles, Brussels, Belgium (Sep 5–8, 2004).
- ANTS2002 – From Ant Colonies to Artificial Ants: Third International Workshop on Ant Algorithms, Université Libre de Bruxelles, Brussels, Belgium (Sep 11–14, 2002).
- ANTS2000 – From Ant Colonies to Artificial Ants: Second International Workshop on Ant Algorithms, Université Libre de Bruxelles, Brussels, Belgium (Sep 7–9, 2000).
- Fourth European Workshop on Reinforcement Learning (EWRL-4), Lugano, Switzerland (Oct 29–30, 1999).
- ANTS'98 – From Ant Colonies to Artificial Ants: First International Workshop on Ant Colony Optimization, Université Libre de Bruxelles, Brussels, Belgium (Oct 15–16, 1998).
- Third European Workshop on Reinforcement Learning (EWRL-3), Rennes, France (Oct 13–14, 1997).
- Second European Workshop on Reinforcement Learning (EWRL-2), Milano, Italy (Sep 18–19, 1995).
- First European Workshop on Reinforcement Learning (EWRL-1), Brussels, Belgium (Sep 27–28, 1994).

Vice-general Chair for the conferences:

- DARS 2021 – 15th International Symposium on Distributed Autonomous Robotic Systems, Kyoto, Japan
- SWARM 2021 – The Fourth International Symposium on Swarm Behavior and Bio-Inspired Robotics, Kyoto, Japan
- SWARM 2019 – The Third International Symposium on Swarm Behavior and Bio-Inspired Robotics, Okinawa, Japan (November 20–22)
- SWARM 2017 – The Second International Symposium on Swarm Behavior and Bio-Inspired Robotics, Kyoto, Japan (October 30–November 1, 2017)
- SWARM 2015 – The First International Symposium on Swarm Behavior and Bio-Inspired Robotics, Kyoto, Japan (October 28–30, 2015)

Co-organizer of the conference ECAL 2011 – European Conference on Artificial Life, Paris, France (August 8–12, 2011).

Advisory Chair for the conference IEEE CEC 2011 – 2011 IEEE Congress on Evolutionary Computation – The Big EC, New Orleans, LO, USA (June 5–8, 2011).

Technical Program Co-Chair for the 14th International Symposium on Distributed Autonomous Robotic Systems (DARS), University of Colorado at Boulder, CO, USA (Oct 15–17, 2018).

Technical program chair for IEEE CEC-2005 – IEEE International Congress on Evolutionary Computation, Edinburgh, UK (Sep 2–5, 2005).

Special session chair for the **Ant Colony Optimization** track Conference "MIC-2001 – 4th Metaheuristics International Conference," Porto, Portugal, (Jul 16-20, 2001).

Plenary talk chair for the CEC'2000 – IEEE International Congress on Evolutionary Computation, La Jolla, CA (Jul 16-19, 2000).

Special track chair for the **Ant Colony Optimization** track at the Conference "IEEE 1999 International Congress on Evolutionary Computation", Washington D.C. (Jul 6-9, 1999).

Special programme chair for the **Evolutionary Robotics** track at the Conference "Third Annual Genetic Programming Conference - GP 98," University of Wisconsin - Madison, WI(Jul 22–25, 1998).

Session organizer for the "INFORMS Meeting–Session on Ant Colony Optimization," Tel Aviv, Israel (Jun 28–Jul 1, 1998).

Organizer of the "First International Contest on Evolutionary Optimization (ICEO-1)," Nagoya University, Japan (May 20-22, 1996).

European liaison chair for the "1995 IEEE Conference on Evolutionary Computation," Perth, Western Australia (Nov 29 – Dec 1, 1995).

Conference program committees

Member of the Program Committee of many international conferences every year.

Senior member of the Program Committee for the following conference:

- International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2002), Palazzo Re Enzo, Bologna, Italy (July 15-19, 2002).
- 2001 Genetic and Evolutionary Computation Conference (GECCO-2001), San Francisco, CA, (Jul 7-11, 2001).
- 2000 Genetic and Evolutionary Computation Conference (GECCO-2000), Las Vegas, USA (8-12 Jul, 2000).
- Fourth International Conference on Autonomous Agents (Agents 2000), Barcelona, Spain (Jun 3-7, 2000).
- 1999 Genetic and Evolutionary Computation Conference (GECCO-99), Orlando, FL (Jul 14-17, 1999).

Society memberships

Member of the ÆRG – Association of ERC Grantees, since 2022

Elected member of "Academiaea Europea", since 2010

Member of IEEE (Institute of Electrical and Electronics Engineers) since 1992 (**Fellow** since 2006).

Member of ECCAI (European Coordinating Committee for Artificial Intelligence) since 1988 (**Fellow** since 2007).

Founding member of AI*IA (Associazione Italiana per l'Intelligenza Artificiale) since 1988.

Member of AAAI (Association for the Advancement of Artificial Intelligence) since 1999 (**Fellow** since 2015).

Founding member of ISGEC (International Society for Genetic and Evolutionary Computation – now ACM-SIGEVO) since 1999.

Member of ACM (Association for Computing Machinery) since 2000.

Member of AAAS (American Association for the Advancement of Science Sciences) since 2001.

Advisory boards

Member of the International Advisory Board of the Center of Excellence in Artificial Intelligence (CEAI) at AGH University in Krakow, Poland, since 2024.

Member of the Scientific Council for ValgrAI – Valencian Graduate School and Research Network of Artificial Intelligence, since 2021.

Member of the Scientific Advisory Board for the Autonomous Robotics Research Center (ARRC) at Technology Innovation Institute (TII) - Abu Dhabi, since 2021.

Projects evaluations

Referee for the Horizon Europe European Community Programme (2021-2027).

Referee for the Horizon2020 European Community Programme (2014-2020).

Referee for the European Research Council – ERC (since 2011).

Referee for the IST European Community Programme (2007-2013).

Referee for the IST European Community Programme "FET – Future and Emerging Technologies" (1999-2011).

Referee for the ESPRIT European Community Programme "LTR – Long Term Research" (1997-1998).

Referee for the TMR European Community Programme "Training and Mobility of Researchers" (1997-1998).

Member of the Qualification Commission "Information and Communication Systems" of the Belgian State (1998).

LANGUAGES

Fluent Italian, English, French

Basic German

WORK ADDRESS

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PUBLICATIONS

International books

IB.01 Dorigo M. & M. Colombetti (1998). *Robot Shaping: An Experiment in Behavior Engineering*. Cambridge, MA: MIT Press/Bradford Books.

IB.02 Bonabeau E., M. Dorigo & G. Theraulaz (1999). *Swarm Intelligence: From Natural to Artificial Systems*. New York, NY: Oxford University Press.

IB.03 Dorigo M. & T. Stützle (2004). *Ant Colony Optimization*. Cambridge, MA: MIT Press/Bradford Books.

Edited international books, proceedings and journal special issues

EB.01 Dorigo M. (1996). Special Issue on Learning Autonomous Robots, *IEEE Transactions on Systems, Man, and Cybernetics–Part B,* 26 (3): 361–506.

EB.02 Koza J. R., D. Kalyanmoy, M. Dorigo, D. B. Fogel, M. Garzon, H. Iba, & R. L. Riolo, Editors (1997). *Genetic Programming 1997: Proceedings of the Second Annual Conference*, July 13-16, 1997, Stanford University, San Francisco, CA: Morgan Kaufmann, pp. 542.

EB.03 Koza J. R., W. Banzhaf, K. Chellapilla, D. Kalyanmoy, M. Dorigo, D. B. Fogel, M. H. Garzon, D. E. Goldberg, H. Iba, & R. L. Riolo, Editors (1998). *Genetic Programming 1998: Proceedings of the Third Annual Conference*, July 22-25, 1998, University of Wisconsin, Madison, WI: Morgan Kaufmann, pp. 895.

EB.04 Corne D., M. Dorigo & F. Glover, Editors (1999). *New Ideas in Optimisation.* London, UK:McGraw-Hill, pp. 494.

EB.05 Dorigo M., T. Stützle & G. Di Caro, Editors (2000). Special Issue on Ant Algorithms, *Future Generation Computer Systems*, 16 (8): 851–956.

EB.06 Dorigo M., M. Middendorf & T. Stützle, Editors (2000). Abstract Proceedings of ANTS 2000 – From Real to Artificial Ants: Second International Workshop on ant algorithms, IRIDIA, ULB, pp. 166.

EB.07 Dorigo M., L. M. Gambardella, M. Middendorf & T. Stützle (2002). Special Section on Ant Colony Optimization, *IEEE Transactions on Evolutionary Computation*, 6 (4): 317–365.

EB.08 Dorigo M., G. Di Caro & M. Sampels, Editors (2002). *Ant Algorithms, Proceedings of Ants2002 – From Real to Artificial Ants: Third International Workshop on Ant Algorithms*, LNCS 2463, Springer, Berlin, Germany, pp. 310.

EB.09 Dorigo M. & E. Sahin, Editors (2004). Special Issue on Swarm Robotics. *Autonomous Robots,* 17 (2–3): 111–246.

EB.10 Dorigo M., M. Birattari, C. Blum, L. M. Gambardella, F. Mondada & T. Stützle, Editors (2004). *Ant Colony Optimization and Swarm Intelligence – 4th International Workshop – ANTS 2004, Proceedings,* LNCS 3172, Springer, Berlin, Germany, pp. 434.

EB.11 Dorigo M., L. M. Gambardella, M. Birattari, A. Martinoli, R. Poli & T. Stützle, Editors (2006). *Ant Colony Optimization and Swarm Intelligence – 5th International Workshop, ANTS 2006, Proceedings,* LNCS 4150, Springer, Berlin, Germany, pp. 526.

EB.12 Dorigo M., M. Birattari, C. Blum, M. Clerc, T. Stützle & A. Winfield, Editors (2008). *Ant Colony Optimization and Swarm Intelligence – 6th International Conference, ANTS 2008, Proceedings,* LNCS 5217, Springer, Berlin, Germany, pp. 420.

EB.13 Dorigo M., M. Birattari, G. Di Caro, R. Doursat, A. Engelbrecht, D. Floreano, L.M. Gambardella, R. Groß, E. Sahin, H. Sayama & T. Stützle, Editors (2010). *Swarm Intelligence – 7th International Conference, ANTS 2010, Proceedings,* LNCS 6234, Springer, Berlin, Germany, pp. 584.

EB.14 Lenaerts T., M. Giacobini, H. Bersini, P. Bourgine, M. Dorigo and R. Doursat (2011). *Advances in Artificial Life, ECAL 2011. Proceedings of the Eleventh European Conference on the Synthesis and Simulation of Living Systems*, MIT Press, Cambridge, MA, pp. 910.

EB.15 Dorigo M., M. Birattari, C. Blum, A. L. Christensen, A. Engelbrecht, R. Groß & T. Stützle, Editors (2012). *Swarm Intelligence – 8th International Conference, ANTS 2012, Proceedings,* LNCS 7461, Springer, Berlin, Germany, pp. 356.

EB.16 Lenaerts T., M. Giacobini, H. Bersini, P. Bourgine, M. Dorigo and R. Doursat (2013). Special Issue for the 20th Anniversary of the European Conference on Artificial Life (ECAL 2011), *Artificial Life*, 20 (1).

EB.17 Dorigo M., M. Birattari, S. Garnier, H. Hamann, M. Montes de Oca, C. Solnon, T. Stützle, Editors (2014). *Swarm Intelligence – 9th International Conference, ANTS 2014, Proceedings,* LNCS 8667, Springer, Berlin, Germany, pp. 296.

EB.18 Dorigo M., M. Birattari, X. Li, M. López-Ibáñez, K. Ohkura, C. Pinciroli, T. Stützle, Editors (2016). *Swarm Intelligence – 10th International Conference, ANTS 2016, Proceedings,* LNCS 9882, Springer, Berlin, Germany, pp. 304.

EB.19 Dorigo M., M. Birattari, C. Blum, A. L. Christensen, A. Reina, V. Trianni, Editors (2018). *Swarm Intelligence – 11th International Conference, ANTS 2018, Proceedings,* LNCS 11172, Springer, Berlin, Germany, pp. 438.

EB.20 Dorigo, M., T. Stützle, M. J. Blesa, C. Blum, H. Hamann, M. K. Heinrich, V. Strobel, Editors (2020). *Swarm Intelligence – 12th International Conference, ANTS 2020, Proceedings,* LNCS 12421, Springer, Berlin, Germany, pp. 354.

EB.21 Dorigo, M., H. Hamann, M. López-Ibáñez, G. García-Nieto, A. Engelbrecht, C. Pinciroli, V. Strobel, C. Camacho-Villalón, Editors (2022). *Swarm Intelligence – 13th International Conference, ANTS 2022, Proceedings,* LNCS 13491, Springer, Berlin, Germany, pp. 382.

EB.22 Hamann H., M. Dorigo, L. Pérez Cáceres, A. Reina, J. Kuckling, T. K. Kaiser, M. Soorati, K. Hasselman, E. Buss, Editors (2024). *Swarm Intelligence – 14th International Conference, ANTS 2024, Proceedings,* LNCS 14987, Springer, Cham, Switzerland, pp. 258.

International journals

IJ.01 Dorigo M. (1992). Using Transputers to Increase Speed and Flexibility of Genetics-based Machine Learning Systems. *Microprocessing and Microprogramming (*now *Journal of Systems Architecture),* 34: 147–152, North Holland.

IJ.02 Dorigo M. & U.Schnepf (1993). Genetics-Based Machine Learning and Behavior-Based Robotics: A New Synthesis. *IEEE Transactions on Systems, Man, and Cybernetics*, 23 (1): 141–154.

IJ.03 Bertoni A. & M. Dorigo (1993). Implicit Parallelism in Genetic Algorithms. *Artificial Intelligence*, 61 (2): 307–314.

IJ.04 Dorigo M. (1993). Genetic and Non-Genetic Operators in Alecsys. *Evolutionary Computation*, 1 (2): 151–164, MIT Press.

IJ.05 Dorigo M. & M. Colombetti (1994). Robot Shaping: Developing Autonomous Agents through Learning. *Artificial Intelligence,* 71 (2): 321–370.

IJ.06 Colombetti M. & M. Dorigo (1994). Training Agents to Perform Sequential Behavior. *Adaptive Behavior,* MIT Press, 2 (3): 247–275.

IJ.07 Maniezzo V., M. Dorigo & A. Colorni (1995). Algodesk: An Experimental Comparison of Eighth Evolutionary Heuristics Applied to the Quadratic Assignment Problem. *European Journal of Operational Research,* 81: 188–204.

IJ.08 Dorigo M. (1995). ALECSYS and the AutonoMouse: Learning to Control a Real Robot by Distributed Classifier Systems. *Machine Learning,* 19 (3): 209–240.

IJ.09 Patel M.J., M. Colombetti & M. Dorigo (1995). Evolutionary Learning for Intelligent Automation: A Case Study. *Intelligent Automation and Soft Computing,* 1(1): 29–42.

IJ.10 Dorigo M., V. Maniezzo & A. Colorni (1996). Ant System: Optimization by a Colony of Cooperating Agents. *IEEE Transactions on Systems, Man, and Cybernetics–Part B,* 26 (1): 29–41. **More than 17,800 citations in Google Scholar (November 2023)**.

IJ.11 Colombetti M., M.Dorigo & G.Borghi (1996). Behavior Analysis and Training: A Methodology for Behavior Engineering. *IEEE Transactions on Systems, Man, and Cybernetics-Part B*, 26 (3): 365–380.

IJ.12 Dorigo M. (1996). Editorial Introduction to the Special Issue on Learning Autonomous Robots. (Editorial) *IEEE Transactions on Systems, Man, and Cybernetics-Part B*, 26 (3): 361–364.

IJ.13 Colorni A., M. Dorigo, F. Maffioli, V. Maniezzo, G. Righini & M. Trubian (1996). Heuristics from Nature for Hard Combinatorial Problems. *International Transactions in Operational Research,* 3 (1): 1–21.

IJ.14 Caironi P.V.C. & M. Dorigo (1997). Training and Delayed Reinforcements in Q-learning Agents. *International Journal of Intelligent Systems*, 12 (10): 695–724.

IJ.15 Dorigo M. & L.M. Gambardella (1997). Ant Colonies for the Traveling Salesman Problem. *BioSystems*, 43: 73–81. **More than 3,300 citations in Google Scholar (November 2023)**.

IJ.16 Dorigo M. & L.M. Gambardella (1997). Ant Colony System: A Cooperative Learning Approach to the Traveling Salesman Problem. *IEEE Transactions on Evolutionary Computation*, 1 (1): 53–66. **More than 11,900 citations in Google Scholar (November 2023)**.

IJ.17 Dorigo M. & M. Colombetti (1997). Précis of Robot Shaping: An Experiment in Behavior Engineering. MIT Press/Bradford Books 1997. In Special issue on Complete Agent Learning in Complex Environments, M.J. Mataric (Ed.), *Adaptive Behavior*, 5 (3–4): 391–405.

IJ.18 Dorigo M. & M. Colombetti (1997). Reply to Dario Floreano's "Engineering Adaptive Behavior". In Special issue on Complete Agent Learning in Complex Environments, M.J. Mataric (Ed.), *Adaptive Behavior*, 5 (3–4): 417–420.

IJ.19 Colorni A., M. Dorigo & V. Maniezzo (1998). Metaheuristics for High-School Timetabling. *Computational Optimization and Applications,* 9 (3): 275–298.

IJ.20 Di Caro G. & M. Dorigo (1998). AntNet: Distributed Stigmergetic Control for Communications Networks. *Journal of Artificial Intelligence Research (JAIR)*, 9: 317–365. **More than 2,300 citations in Google Scholar (November 2023)**.

IJ.21 Urzelai J. D. Floreano, M. Dorigo & M. Colombetti (1998). Incremental Robot Shaping. *Connection Science*, 10 (3–4): 341–360.

IJ.22 Gambardella L. M., È. D. Taillard & M. Dorigo (1999). Ant Colonies for the Quadratic Assignment Problem. *Journal of the Operational Research Society*, 50 (2): 167–176.

IJ.23 Dorigo M., G. Di Caro & L. M. Gambardella (1999). Ant Algorithms for Discrete Optimization. *Artificial Life*, 5 (2): 137–172. **More than 4,300 citations in Google Scholar (November 2023)**.

IJ.24 Dorigo M., E. Bonabeau & G. Theraulaz (2000). Ant Algorithms and Stigmergy. *Future Generation Computer Systems*, 16 (8): 851–871.

IJ.25 Dorigo M., G. Di Caro & T. Stützle (2000). Guest Editorial – Ant Algorithms. *Future Generation Computer Systems*, 16 (8): v–vii.

IJ.26 Gambardella L. M. & M. Dorigo (2000). Ant Colony System Hybridized with a New Local Search for the Sequential Ordering Problem. *INFORMS Journal on Computing,* 12 (3): 237–255.

IJ.27 Bonabeau E., M. Dorigo & G. Theraulaz (2000). Inspiration for Optimization from Social Insect Behavior. *Nature*, 406: 39–42.

IJ.28 Meuleau N. & M. Dorigo (2002). Ant Colony Optimization and Stochastic Gradient Descent, *Artificial Life,* 8 (2): 103–121.

IJ.29 Dorigo M., L. M. Gambardella, M. Middendorf & T. Stützle (2002). Guest Editorial – Special Section on Ant Colony Optimization, *IEEE Transactions on Evolutionary Computation*, 6 (4): 317–320.

IJ.30 Stützle T. & M. Dorigo (2002). A Short Convergence Proof for a Class of ACO Algorithms, *IEEE Transactions on Evolutionary Computation*, 6 (4): 358–365.

IJ.31 Blum C. & M. Dorigo (2004). The Hyper-Cube Framework for Ant Colony Optimization. *IEEE Transactions on Systems, Man and Cybernetics–Part B,* 34 (2): 1161–1172.

IJ.32 Zlochin M., M. Birattari, N. Meuleau & M. Dorigo (2004). Model-based Search for Combinatorial Optimization: A Critical Survey. *Annals of Operations Research*, 131 (1–4): 373–395.

IJ.33 Dorigo M. & E. Sahin (2004). Swarm Robotics – Special Issue Editorial. *Autonomous Robots,* 17 (2–3): 111–113.

IJ.34 Mondada F., G.C. Pettinaro, A. Guignard, I.V. Kwee, D. Floreano, J.-L. Deneubourg, S. Nolfi, L.M. Gambardella & M. Dorigo (2004). SWARM-BOT: A New Distributed Robotic Concept. *Autonomous Robots,* 17 (2–3): 193–221.

IJ.35 Dorigo M., V. Trianni, E. Sahin, R. Groß, T. H. Labella, G. Baldassarre, S. Nolfi, J.-L. Deneubourg, F. Mondada, D. Floreano & L. M. Gambardella (2004). Evolving Self-organizing Behaviors for a Swarm-bot. *Autonomous Robots,* 17 (2–3): 223–245.

IJ.36 Tuci E., V. Trianni & M. Dorigo (2004). `Feeling' the Flow of Time through Sensorymotor Co-ordination. *Connection Science*, 16 (4): 301–324.

IJ.37 Blum C. & M. Dorigo (2005). Search Bias in Ant Colony Optimization: On the Role of Competition-Balanced Systems. *IEEE Transactions on Evolutionary Computation*, 9 (2): 159–174. **IEEE TEC Outstanding Paper Award.**

IJ.38 Mondada F., L. M. Gambardella, D. Floreano, S. Nolfi, J.-L. Deneubourg & M. Dorigo (2005). The Cooperation of Swarm-Bots: Physical Interactions in Collective Robotics. *IEEE Robotics & Automation Magazine,* 12 (2): 21–28.

IJ.39 Dorigo M. & C. Blum (2005). Ant Colony Optimization Theory: A Survey. *Theoretical Computer Science.* 344 (2–3): 243–278. **Theoretical Computer Science Top Cited Article Award 2005–2010. More than 3,000 citations in Google Scholar (November 2023)**.

IJ.40 Handl J., J. Knowles & M. Dorigo (2006). Ant-based Clustering and Topographic Mapping. *Artificial Life*, 12 (1): 35–61.

IJ.41 Trianni V., S. Nolfi & M. Dorigo (2006). Cooperative Hole Avoidance in a Swarm-Bot. *Robotics and Autonomous Systems*, 54(2): 97–103.

IJ.42 Birattari M., M. Zlochin & M. Dorigo (2006). Towards a Theory of Practice in Metaheuristics Design: A Machine Learning Perspective. *RAIRO–Theoretical Informatics and Applications*, 40: 353-369.

IJ.43 Trianni V. & M. Dorigo (2006). Self-organisation and Communication in Groups of Simulated and Physical Robots. *Biological Cybernetics*, 95: 213-231.

IJ.44 Labella T. H., M. Dorigo & J.-L. Deneubourg (2006). Division of Labour in a Group of Robots Inspired by Ants' Foraging Behaviour. *ACM Transactions on Autonomous and Adaptive Systems*, 1(1): 4-25.

IJ.45 Dorigo M., M. Birattari & T. Stützle (2006). Ant Colony Optimization: Artificial Ants as a Computational Intelligence Technique. *IEEE Computational Intelligence Magazine*, 1(4): 28–39. **More than 16,800 citations in Google Scholar (November 2023)**.

IJ.46 Tuci E., R. Groß, V. Trianni, F. Mondada, M. Bonani & M. Dorigo (2006). Cooperation through Self-assembly in Multi-Robot Systems. *ACM Transactions on Autonomous and Adaptive Systems*, 1(2): 115–150.

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